

REMARKS

Claims 72, 75, and 85 have been amended. Support for the amendments can be found, for example, in Figures 1 and 4. New Claim 94 has been added. Support for Claim 94 can be found in paragraph [0023] of the specification. Claims 72-79, 81-91, 93, and 94 are currently pending.

Examiner Interview

As an initial matter, Applicants' representative would like to thank Examiner Rudy Zervigon for the courtesies extended during the personal interview conducted on Aug. 8, 2006. The substance of the interview, incorporated in the following discussion, included a discussion of Examiner Zervigon's interpretation of Claim 72 and the applied reference of Collins et al. (U.S. Patent No. 5,556,501).

Claim Rejection – 35 U.S.C. §102

Claims 72, 78, 79, 81, and 83 were rejected under 35 U.S.C. §102(a) as allegedly anticipated by Collins et al. (U.S. Patent No. 5,556,501) ("Collins"). Applicants respectfully traverse this rejection.

As stated in MPEP § 2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Claim 72, as amended, recites, *inter alia*, a substantially planar electrically-conductive coil extending across the planar dielectric window, which inductively

couples RF energy into the plasma processing chamber through the planar dielectric window and energizes the process gas into a plasma state, and a substrate support adapted to support a substrate within the processing chamber, such that the substrate lies in a plane parallel to the planar dielectric window (emphasis added).

Applicants respectfully submit that each and every element set forth in independent Claim 72 is not found in Collins. Collins discloses a wafer support electrode **32C** to support wafer **5** (column 8, lines 45-47; Figure 1). Collins further discloses a helical antenna **30** with multiple turn configuration (column 8, lines 4-7) which surrounds a tubular (open-ended cylinder) dielectric dome (column 4, lines 12-15). However, from Figure 1 of Collins, the tubular inner and outer surfaces of the dome extend perpendicularly to wafer support electrode **32C** supporting wafer **5**, rather than parallel to the wafer support electrode **32C** supporting wafer **5**, as recited in Claim 72. Thus, Collins does not disclose each and every element as set forth in independent Claim 72. As such, Applicants respectfully request the withdrawal of the rejection of Claim 72 under 35 U.S.C. § 102(a). Dependent Claims 78, 79, 81, and 83 are also patentable over Collins at least for the same reasons as those discussed above regarding Claim 72.

Claim Rejections – 35 U.S.C. §103

A. Claims 73-77 and 82

Claims 73-77 and 82 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Collins, in view of Latz et al. (U.S. Patent No. 5,169,509) ("Latz"). Applicants respectfully traverse this rejection.

As stated in MPEP § 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim features. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the references also suggest the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Claim 73 recites, *inter alia*, that at least some of the injector tubes are oriented in the plasma processing chamber to direct the process gas along the axes thereof that intersect an exposed surface of the substrate at an acute angle when the substrate is supported on the substrate support (emphasis added).

The Official Action acknowledges that Collins does not disclose injector tubes that are oriented in the plasma processing chamber to direct the process gas along the axes thereof that intersect an exposed surface of the substrate at an acute angle when the substrate is supported on the substrate support and cites Latz to allegedly cure this deficiency of Collins (Official Action at page 4, lines 16-20). However, the Official Action does not identify any disclosure in Latz that discloses or suggests the missing features of Claim 73. Moreover, Latz teaches away from the feature of directing the process gas to intersect an exposed surface of the substrate. In sharp

contrast, Latz discloses that "[c]oating chamber 15 ... is provided with a gap or slot 6 through which the process gas from distributing line 24, in [the] direction of the arrow, can flow into the coating chamber 15" (emphasis added) (column 3, lines 5-7). From Latz's Figure, the direction of the arrow is away from substrates 1, 1', and 1", instead of directing the process gas to intersect an exposed surface of the substrate, as recited in Claim 73. As such, the combination of Collins and Latz does not teach or suggest all the claim features.

The Official Action acknowledges that Collins does not teach the features of Claims 74, 76, 77, and 82, but cites Latz to allegedly cure these deficiencies (Official Action at pages 4-6). However, Latz fails to cure the above noted deficiencies of Collins regarding Claim 72. Accordingly, Applicants submit that Claims 74, 76, 77, and 82 are patentable over the applied references for at least the same reasons as those discussed above regarding Claim 72.

Independent Claim 75, as amended, recites, *inter alia*, a substantially planar electrically-conductive coil extending across the planar dielectric window, which inductively couples RF energy into the plasma processing chamber through the planar dielectric window and energizes the process gas into a plasma state, and a substrate support adapted to support a substrate within the processing chamber, such that the substrate lies in a plane parallel to the planar dielectric window (emphasis added).

The Official Action acknowledges that Collins does not disclose all of the features of independent Claim 75 (Official Action at pages 5-6) and cites Latz to allegedly cure the deficiencies of Collins (Official Action at page 4). However, as discussed above regarding Claim 72, Collins does not disclose at least the claim

feature of a substrate that lies in a plane parallel to the dielectric planar window. Moreover, Latz fails to cure the above-noted deficiencies of Collins. Accordingly, Applicants submit that Claim 75 is patentable over the applied references for at least the same reasons as those discussed above regarding Claim 72.

Because a *prima facie* case of obviousness has not been established, Applicants respectfully request withdrawal of the rejection of Claims 73-77 and 82 under 35 U.S.C. § 103(a).

B. Claim 84

Claim 84 was rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Collins, in view of Chen (U.S. Patent No. 5,169,509) ("Chen"). Applicants respectfully traverse this rejection.

The Official Action acknowledges that Collins does not teach the feature of the substrate support including means for maintaining the substrate at a desired temperature when the substrate is supported on the substrate support as recited in Claim 84, but cites Chen to allegedly cure this deficiency (Official Action at page 8, ¶ 5). However, Chen fails to cure the above-noted deficiencies of Collins regarding Claim 72. Accordingly, Applicants submit that Claim 84 is patentable over the applied references for at least the same reasons as those discussed above regarding Claim 72.

Because a *prima facie* case of obviousness has not been established, Applicants respectfully request withdrawal of the rejection of Claim 84 under 35 U.S.C. § 103(a).

C. Claims 85-91 and 93

Claims 85-91 and 93 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Collins, in view of Chen and Latz. Applicants respectfully traverse this rejection.

Independent Claim 85, as amended, recites, *inter alia*, a substantially planar electrically-conductive coil extending across the planar dielectric window, which inductively couples RF energy into the plasma processing chamber through the planar dielectric window and energizes the process gas into a plasma state, and a substrate support adapted to support a substrate within the processing chamber, such that the substrate lies in a plane parallel to the planar dielectric window (emphasis added).

The Official Action acknowledges that Collins does not disclose all of the features of independent Claim 85 (Official Action at pages 10-11) and cites Chen and Latz to allegedly cure the deficiencies of Collins (Official Action at page 9). However, as discussed above regarding Claim 72, Collins does not disclose at least the claim feature of a substrate that lies in a plane parallel to the dielectric planar window. Moreover, Chen and Latz fail to cure the above-noted deficiencies of Collins. Accordingly, Applicants submit that Claim 85 is patentable over the applied references for at least the same reasons as those discussed above regarding Claim 72. Dependent Claims 86-91 and 93 are also patentable over the applied references for at least the same reasons as those discussed above regarding Claim 72.

Claim 89 recites, *inter alia*, that the injector tubes are oriented in the plasma processing chamber to direct the process gas along the axes thereof that intersect

an exposed surface of the substrate at an acute angle when the substrate is supported on the substrate support (emphasis added).

The Official Action acknowledges that Collins does not teach injector tubes that are oriented in the plasma processing chamber to direct the process gas along the axes thereof that intersect an exposed surface of the substrate at an acute angle when the substrate is supported on the substrate support, as recited in Claim 89 (Official Action, page 11) and cites Latz to allegedly cure this deficiency (Official Action at page 9, ¶ 6). However, the Official Action does not identify any disclosure in Latz that discloses or suggests the missing features of Claim 89. In fact, as discussed above, Latz teaches away from directing the process gas to intersect an exposed surface of the substrate, as discussed above regarding Claim 73.

Because a *prima facie* case of obviousness has not been established, Applicants respectfully request withdrawal of the rejection of Claims 85-91 and 93 under 35 U.S.C. § 103(a).

New Claim

The newly submitted Claim 94 sets forth an additional combination of features, which is further patentably distinguishable over the applied references.

Conclusion

For at least the foregoing reasons, Applicants respectfully submit that all pending claims are allowable, and this application is in condition for allowance. Accordingly, Applicants request a favorable examination and consideration of the

instant application. Should Examiner Zervigon wish to discuss this application, Applicants request that the undersigned be contacted at the number below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: August 23, 2006

By: 
Eric B. Chen
Registration No. 52,725

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620